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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,438	09/09/2003	Jeffrey W. Leon	85694LMB	4708

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EXAMINER	
JUNG, UNSU	

ART UNIT	PAPER NUMBER
1641	

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/658,438	LEON ET AL.	
	Examiner	Art Unit	
	Unsu Jung	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7,9-12,14-33,35-42 and 45-55* is/are pending in the application.

4a) Of the above claim(s) *54* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7,9-12,14-33,35-42,45-53 and 55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 12, 2006 has been entered.

2. Applicant's amendments to cancel claims 8, 13, 43, and 44 amend claims 1,9-12, 14-16, 42, and 45-47 in the reply filed on June 15, 2006 have been acknowledged and entered.

3. Claims 1-4, 7, 9-12, 14-33, and 35-42, and 45-55 are pending and claims 1-4, 7, 9-12, 14-33, 35-42, 45-53, and 55 are being considered for their merits.

Objections Withdrawn

4. Applicant's arguments, see p11, filed on June 15, 2006, with respect to the objection of claim 11 have been fully considered and are persuasive. The objection of claim 11 has been withdrawn in light of the amended claim 11 in the reply filed on June 15, 2006.

Rejections Withdrawn

5. Applicant's arguments, see pp11-12, filed on January 20, 2006, with respect to the following rejections have been fully considered and are persuasive.

- rejection of claims 1-4, 8-10, 12, 35, 43, 45, and 47-53 under 35 U.S.C. 103(a) as being unpatentable over Glazer et al. (WO 00/61282, Oct. 19, 2000) in view of Sutton et al. (U.S. Patent No. 5,714,340, Feb. 3, 1998), Yao et al. (U.S. PG Pub. No. US 2003/0100086 A1, filed May 30, 2001), and Obana (U.S. Patent No. 4,605,686, Aug. 12, 1986); and
- rejection of claims 25 and 26 under 35 U.S.C. 103(a) as being unpatentable over Glazer et al. (WO 00/61282, Oct. 19, 2000) in view of Sutton et al. (U.S. Patent No. 5,714,340, Feb. 3, 1998), Yao et al. (U.S. PG Pub. No. US 2003/0100086 A1, filed May 30, 2001), and Obana (U.S. Patent No. 4,605,686, Aug. 12, 1986), and further in view of Ogawa et al. (U.S. Patent No. 4,548,869, Oct. 22, 1985).

The above rejections under 35 U.S.C. 103(a) have been withdrawn in light of the amended claim 1 in the reply filed on June 15, 2006.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-4, 7, 9-12, 14-24, 27-30, 32, 33, 35-42, 45-53, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glazer et al. (WO 00/61282, Oct. 19, 2000) in view of Sutton et al. (U.S. Patent No. 5,714,340, Feb. 3, 1998), Yao et al. (U.S. PG Pub. No. US 2003/0100086 A1, filed May 30, 2001), and Obana (U.S. Patent

No. 4,605,686, Aug. 12, 1986), and in light of Pierce et al. (U.S. Patent No. 4,258,001, Mar. 24, 1981).

Glazer et al. teaches a microarray comprising a porous silica substrate, which offer an increase in array density and signal enhancement over conventional flat glass substrates (Abstract). The porous substrate provides a large surface area for biological polymers (p8, lines 6-8) such as nucleic acids, polynucleotides, polypeptides, and polysaccharides (Abstract) to be attached to make an array. A porous layer is formed on a substrate material and in some embodiments, the porosity, pore size, and thickness of the porous layer is chosen according to desired functionalization characteristics (p4, lines 9-11). Porous substrates are generated by creating a 3D matrix to increase the surface area and therefore increase the number of sites available for array synthesis in the same lateral dimensions (p8, lines 11-13). One advantage of using a porous layer is to increase the effective surface are to make an array that can be functionalized with a much higher density of polymers for a given two dimensional or "flat" area without changing the spacing between cells of the array on the substrate surface (p8, lines 13-16). The effective surface area is the surface area of the porous region that is available for adsorption of polymer molecules or for polymer synthesis (p8, lines 16-18). Glazer et al. further teaches a bioaffinity tag bound to the porous layer localized in a spatially addressable manner (p26, lines 18-22) and Sutton et al. teaches that antibodies (column 1, lines 44-45) are bound to the polymer particle of the porous layer (column 5, lines 33-37). However, Glazer et al. fails to teach a porous layer comprising monodisperse polymer particles having a mean diameter between 0.05 to

50 microns and a particle size distribution with a coefficient of variation less than 20%. Further, Glazer et al. fails to teach a microarray, wherein the chemically active groups such as carboxylic acids, primary amines and secondary amines are present on stabilizer polymers, which are covalently grafted, chemiabsorbed, or physically absorbed to the surface of the polymer particles.

Sutton et al. teaches a porous layer comprising polymer particles having a diameter in the range of 0.1 to 5 microns and a hydrophilic polymer (column 3, lines 1-11). The porous layer provides a substrate for immobilizing receptor such as antibodies while avoiding inactivation, which results in low sensitivity (column 2, lines 8-11). Sutton et al. further teaches that active groups such as vinylsulfonyl group can be directly attached to polymer particles for covalent attachment of receptor to the particles (column 5, lines 32-37) and that polymer particles can be composed of a wide variety of organic polymers, including both natural and synthetic, and preferably are composed of one or more addition polymers described in Pierce et al. (column 5, lines 22-25).

Pierce et al. teaches a particulate structure on a support surface containing interactive compositions (bioaffinity tags) useful for the analysis of various substances in liquids (Abstract, lines 18-20). The interactive compositions if present in the particulate structure can be immobilized therein to minimize or prevent undesired migration of the composition within the structure or other zones of an element containing the particulate structure (column 21, lines 10-14). Immobilization can be effected by a variety of means including physical absorption and chemical bonding to the particles of the structure. For example, particles, which are prepared from polymers containing an

active linking or bonding site can advantageously be chemically bonded to one or more components of a particular interactive composition by establishing a covalent bond between this site and a reactive group of the interactive component. Pierce et al. teaches addition polymers having reactive groups such as vinylbenzylamine, which contains primary, secondary or tertiary amino group (column 12, lines 14-20). The particulate structure can readily take up, uniformly distribute within itself, meter, rapidly transport applied liquid samples containing any of a wide variety of analytes (column 3, lines 46-50), and is particularly suited for immunoassay (column 6, lines 41-43). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to realize that polymer particles of Sutton et al. would comprise addition polymers (stabilizer polymer) of Pierce et al. physically absorbed to the surface of the polymer particles for immobilization of interactive compositions such as antibodies (column 20, lines 49-58) via active linking or binding site such as primary and secondary amine groups.

Yao et al. teaches that porous polymeric material having polymeric particles having a narrow size distribution (i.e. particles of about the same size) can be consistently packed into molds, and a narrow particle size distribution allows the production of substrate with a uniform porosity (p6, paragraph [0072]). This is advantageous because solutions and gases tend to flow more evenly through uniformly porous materials than those, which contain regions of high and low permeability (p6, paragraph [0072]). Uniformly porous substrates are also less likely to have structural

weak spots than substrates, which comprise unevenly distributed pores of substantially different sizes (p6, paragraph [0072]).

Obana et al. teaches a method of producing polymer (latex) particles with uniform diameters having coefficient of variation in the range of 5% or less within each batch (column 3, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the porous layer in the microarray of Glazer et al. with a porous layer comprising polymer particles having small diameter in the range of 0.1 to 5 microns as taught by Sutton et al. to provide a substrate for immobilizing receptors such as antibodies with an advantage of having enhanced sensitivity and providing larger effective surface area for available for adsorption of biological polymers such as antibodies. The larger effective surface area provided by smaller diameter of polymeric particles as taught by Sutton et al. would provide an array that can be functionalized with a much higher density of biological polymers for a given two dimensional or "flat" area without changing the spacing between cells of the array on the substrate surface thereby increasing sensitivity of the microarray. In addition, it would have been obvious to one of ordinary skill in the art at the time of the invention to use polymeric particles having a narrow size distribution with coefficient of variation of polymer particle diameter in the range of 5% of less as taught by Obana since porous polymeric material having polymeric particles having a narrow size distribution (i.e. particles of about the same size) can be consistently packed into molds, and a narrow particle size distribution allows the production of substrate with a uniform porosity as taught by Yao et al.

Having a substrate with uniform porosity is advantageous because solutions and gases tend to flow more evenly through uniformly porous materials than those, which contain regions of high and low permeability, and uniformly porous substrates are also less likely to have structural weak spots than substrates, which comprise unevenly distributed pores of substantially different sizes.

With respect to claim 2-4, Sutton et al. teaches polymer particles comprise one or more polymers, which include poly-acrylamides (column 5, lines 22-25 and column 6, lines 29-54).

With respect to claims 9-10 and 12, Sutton et al. teaches polymer particles comprise chemically active groups such as vinylsulfonyl units (column 5, lines 32-37).

With respect to claim 14, Pierce et al. teaches stabilizer polymers comprising vinylbenzylamine (column 12, lines 19-20).

With respect to claims 15-20 and 24, Pierce et al. teaches a stabilizer polymers comprising ionic monomers such as acrylic and methacrylic acids (column 11, lines 59-60), which have a weight percentage ranging from 0-30%, cross-linked with vinylsulfonyl group having a weight percent ranging from 1-20% (column 12, line 23 and lines 36-42). Therefore, it would be obvious to one skill in the art to realize that the combination of ionic monomers and cross-linking group having the weight range as discussed above would encompass the molar percentages ranging from 25 to 75 and 75 to 25 for x and y in Formula I, respectively.

With respect to claims 21-23, Pierce et al. teaches a stabilizer polymer comprising nonionic monomers such as acrylamide (column 12, line 52-55) and

methacrylamide (column 12, line 52-55), which have weight percent ranging from 0-20% (column 12, line 52).

With respect to claim 27-30, Pierce et al. teaches polymer particles comprising ethylenically unsaturated polymerizable monomer such as methacrylamides (column 12, lines 52-55) comprising chemical functionalities such as vinyl groups (column 12, lines 36-42).

With respect to claims 32 and 33, Pierce et al. teaches polymer particles comprising one or more water-soluble ethylenically unsaturated monomer such as styrenics (column 11, lines 34-35), acrylates (column 12, lines 43-47), and vinylpyridines (column 12, lines 48-51), wherein the monomers comprises less than 20% of total weight of the polymer particles (column 11, line 14 and column 12, lines 43-52).

With respect to claim 35, Sutton et al. teaches polymer particles having a diameter in the range of 0.1 to 5 microns (column 3, lines 1-11)

With respect to claims 36 and 37, Pierce et al. teaches adhesive (hydrophilic binder) comprising gelatin (column 2, line 40).

With respect to claim 38, Sutton et al. teaches that bead (polymer particle) spreading layer comprising a particulate structure formed by organo-polymeric particles and a polymeric adhesive for the organo-polymeric particles described in Pierce et al. is useful (column 5, lines 12-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to realize that bead spreading layer of Sutton et al. would comprise an adhesive layer (hydrophilic binder) of Pierce et al. comprising

polymerizable monomers as described in groups (g1) and (g2), which include gelatin, containing alkali metals (column 12, lines 26-42 and column 15, line 14).

With respect to claims 39-41, Pierce et al. teaches a hydrophilic binder comprising chemically active groups rich in specific functionalities such as vinylsulfonyl group (column 12, lines 36-42).

With respect to claim 42, Pierce et al. teaches a hydrophilic binder comprising vinylbenzylamine (column 12, lines 19-20).

With respect to claim 44, Glazer et al. teaches that the porosity, pore size, and thickness of the porous layer is chosen according to desired functionalization characteristics (p4, lines 9-11). Porous substrates are generated by creating a 3D matrix to increase the surface area and therefore increase the number of sites available for array synthesis in the same lateral dimensions (p8, lines 11-13). One advantage of using a porous layer is to increase the effective surface are to make an array that can be functionalized with a much higher density of polymers for a given two dimensional or "flat" area without changing the spacing between cells of the array on the substrate surface (p8, lines 13-16). The effective surface area is the surface area of the porous region that is available for adsorption of polymer molecules or for polymer synthesis (p8, lines 16-18). As discussed above, Pierce et al. teaches a hydrophilic binder comprising chemically active groups rich in specific functionalities such as vinylsulfonyl group (column 12, lines 36-42). Furthermore, Sutton et al. teaches that the chemically active groups such as vinylsulfonyl group can be used to directly attach bioaffinity tags (receptors, column 5, lines 34-37). Therefore, it would have been obvious to one of

ordinary skill in the art at the time of the invention to include bioaffinity tag (polymer molecules) bound to the hydrophilic binder of the porous layer of Pierce et al. as immobilizing the bioaffinity tag in the porous hydrophilic binder layer of Pierce et al. would provide additional effective surface area for adsorption of bioaffinity tag resulting in a much higher density of bioaffinity tag for a given two dimensional or "flat" area without changing the spacing between cells of the array on the substrate surface. One of ordinary skill in the art would recognize that the increased density of bioaffinity tag would increase the sensitivity of assay employing the microarray having the porous layer (Glazer et al, p48, lines 19-21).

With respect to claims 45 and 47, Glazer et al. teaches a bioaffinity tag bound to the porous layer localized in a spatially addressable manner (p26, lines 18-22) and Sutton et al. teaches that antibodies (column 1, lines 44-45) are bound to the polymer particle of the porous layer (column 5, lines 33-37).

With respect to claim 46, Pierce et al. teaches a stabilizer polymer, which is a part of the particulate structure and comprise polymers containing an active linking or bonding site, can advantageously be chemical bonded to one or more components of a particular interactive composition (bioaffinity tag, column 21, lines 10-25).

With respect to claim 48, Sutton et al. teaches at least one porous layer comprising 200 to 400 microns in thickness (column 9, lines 61-63).

With respect to claim 49, Sutton et al. teaches at the at least one layer comprises more than a single layer to produce a three-dimensional array (column 3, lines 1-10).

With respect to claim 50, Sutton et al. teaches a porous layer comprising cross-linking polymers (column 6, line 57).

With respect to claims 51 and 52, Glazer et al. teaches a support comprising glass (p16, lines 10-12).

With respect to claim 53, Sutton et al. teaches a support having a subbing layer between the porous layer and the support (column 9, lines 44-51).

With respect to claim 55, Pierce et al. teaches polymer particles comprising one or more ethylenically unsaturated monomer comprising acrylic ester (column 11, lines 48-51).

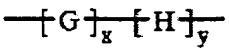
10. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glazer et al. (WO 00/61282, Oct. 19, 2000) in view of Sutton et al. (U.S. Patent No. 5,714,340, Feb. 3, 1998), Yao et al. (U.S. PG Pub. No. US 2003/0100086 A1, filed May 30, 2001), and Obana (U.S. Patent No. 4,605,686, Aug. 12, 1986), and in light of Pierce et al. (U.S. Patent No. 4,258,001, Mar. 24, 1981) as applied to claims 1, 16, and 17 above, and further in view of Ogawa et al. (U.S. Patent No. 4,548,869, Oct. 22, 1985).

Glazer et al. in view of Sutton et al., Yao et al. and Obana et al. and in light of Pierce et al. teaches a microarray comprising a stabilizer polymer as discussed above. Pierce et al. teaches a particulate structure on a support surface containing interactive compositions (bioaffinity tags) useful for the analysis of various substances in liquids (Abstract, lines 18-20). The interactive compositions if present in the particulate structure can be immobilized therein to minimize or prevent undesired migration of the

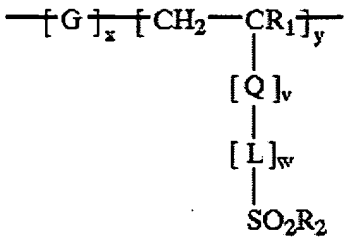
composition within the structure or other zones of an element containing the particulate structure (column 21, lines 10-14). Immobilization can be effected by a variety of means including physical absorption and chemical bonding to the particles of the structure. For example, particles, which are prepared from polymers containing an active linking or bonding site can advantageously be chemically bonded to one or more components of a particular interactive composition by establishing a covalent bond between this site and a reactive group of the interactive component. Pierce et al. teaches addition polymers (stabilizer polymer) comprising a monomer blend containing from monomers selected from groups (a)-(k) (column 14, lines 58-61) such as acrylamide (column 12, line 3) having a cross-linking vinylsulfonyl group (column 12, lines 36-42). The particulate structure can readily take up, uniformly distribute within itself, meter, rapidly transport applied liquid samples containing any of a wide variety of analytes (column 3, lines 46-50), and is particularly suited for immunoassay (column 6, lines 41-43). Furthermore, Sutton et al. teaches a coating layer comprising polyacrylamide, which does not adversely affect the activity of antibody receptors immobilized on the polymer particles (column 7, lines 30-32). A further advantage is achieved by forming uniform coating as the viscosity of the polymers increases substantially resulting in a "set layer" that remains stable and uniform during wet transport and drying of the polymers.

However, Glazer et al. in view of Sutton et al., Yao et al. and Obana et al. fails to teach a microarray, wherein the vinylsulfone or vinylsulfone precursor "H" of Formula I represents groups represented by Formula II:

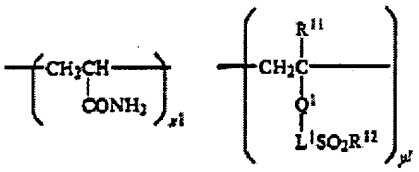
Formula I



Formula II



Ogawa et al. teaches an adhesive layer to improve adhesion between a plastic support (column 4, line 17) and a polyacrylamide gel medium (column 2, lines 34-37) and the adhesive layer comprising a polymer having at least one specifically selected repeated unit having the following formula:



in which R^{11} is a hydrogen atom or an alkyl group containing 1-6 carbon atoms;

Q^1 is –COO–, $CON(R^{11})$– or an arylene group containing 6-10 carbon atoms;

L^1 is a divalent group containing at least one linkage selected from the group consisting of –COO– and $–CON(R^{11})–$ and containing 3-15 carbon atoms, or divalent atom containing at least one linkage selected from the group consisting of –O–, $–N(R^{11})$ –, –CO–, –SO–, $–SO_2–$, $–SO_3–$, $–SO_2N(R^{11})$ –, $–N(R^{11})CON(R^{11})$ and $–N(R^{11})COO–$, and containing 1-12 carbon atoms, in which R^{11} has the same meaning as defined above;

R^{12} is $-CH=CH_2$ or $-CH_2CH_2X^1$, in which X^1 is a substituent replaceable with a nucleophilic group or releasable in the form of HX^1 by a base and x^1 and y^1 both representing molar percentage range from 0 to 99 and from 1 to 100, respectively, and x^1+y^1 is not less than 90 (column 2, line 47-column 3, line 12). Ogawa et al. further teaches a process for synthesis of ethylenic unsaturated monomers containing a vinylsulfonyl group or function group convertible into vinylsulfonyl group, which are employable for the preparation of polymers comprising repeating unit represented by the formula above.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use adhesive layer having the formula of Ogawa et al. as a stabilizer polymer composition comprising vinylsulfone or vinylsulfone precursor "H" of in the polymer particle of Glazer et al. in view of Sutton et al., Yao et al. and Obana et al. and in light of Pierce et al. as the adhesive layer of Ogawa et al. provides functional groups such as vinylsulfonyl group for immobilization of interactive compositions such as antibodies while improving adhesion between the plastic support (polymer particles) and coating layer comprising polyacrylamide of Sutton et al. The advantage of improving adhesion between the polymeric particles and coating layer provides the motivation to combine the teachings of Glazer et al. in view of Sutton et al., Yao et al. and Obana et al. and in light of Pierce et al. and Ogawa et al. with a reasonable expectation of success as the polyacrylamide coating layer of Sutton et al. would adhere to the polymeric particle comprising stabilizer polymer composition comprising vinylsulfone or vinylsulfone precursor "H" of in the polymer particle.

11. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glazer et al. (WO 00/61282, Oct. 19, 2000) in view of Sutton et al. (U.S. Patent No. 5,714,340, Feb. 3, 1998), Yao et al. (U.S. PG Pub. No. US 2003/0100086 A1, filed May 30, 2001), and Obana (U.S. Patent No. 4,605,686, Aug. 12, 1986) and in light of Pierce et al. (U.S. Patent No. 4,258,001, Mar. 24, 1981) as applied to claims 1 and 27 above, and further in view of Li et al. (U.S. Patent No. 5,288,763, Feb. 22, 1994).

Glazer et al. in view of Sutton et al., Yao et al. and Obana et al. and in light of Pierce et al. teaches a microarray comprising a stabilizer polymer as discussed above. However, Glazer et al. in view of Sutton et al., Yao et al. and Obana et al. and in light of Pierce et al. fails to teach polymeric particle comprising at least one ethylenically unsaturated polymerizable monomer comprising ethylene glycol dimethacrylate.

Li et al. teaches polymer particles comprising cross-linkers, which include ethylene glycol dimethacrylate (column 4, lines 20-23). The cross-linking is responsible for making the polymer particles substantially insoluble in any solvents, including strong acidic or alkaline solution (column 4, lines 30-33). The polymer particles of Li are useful in variety of analytical, diagnostic techniques as well as solid state peptide and DNA synthesis (Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the polymer particles of Glazer et al. in view of Sutton et al., Yao et al. and Obana et al. and in light of Pierce et al. with cross-linking polymers such as ethylene glycol dimethacrylate during the process of making the polymer

particles as taught by Li et al. in order to provide polymeric particles, which are substantially insoluble in any solvents, including strong acidic or alkaline solution as a result of cross-linking. The advantage of having polymeric particles, which are substantially insoluble in any solvents, including strong acidic or alkaline solution as a result of cross-linking provides the motivation to combine the teachings of Glazer et al. in view of Sutton et al., Yao et al. and Obana et al. and in light of Pierce et al. and Li et al. with reasonable expectation of success as the polymeric particles with cross-linking polymers can be used in a variety of analytical and diagnostic assays.

Response to Arguments

12. Applicant's arguments with respect to claims 1-4, 8-10, 12, 35, 43, 45, and 47-53 have been considered but are moot in view of the new ground(s) of rejection necessitated by the amended claim 1.

13. Applicants' arguments regarding rejection of claims 11, 13, 14-24, 27-30, 32, 33, 36-42, 44, 46, and 55 under 35 U.S.C. 103(a) as being unpatentable over Glazer et al. (WO 00/61282, Oct. 19, 2000) in view of Sutton et al. (U.S. Patent No. 5,714,340, Feb. 3, 1998), Yao et al. (U.S. PG Pub. No. US 2003/0100086 A1, filed May 30, 2001), and Obana (U.S. Patent No. 4,605,686, Aug. 12, 1986), and in light of Pierce et al. (U.S. Patent No. 4,258,001, Mar. 24, 1981) are not persuasive in view of previously stated grounds of rejection. As stated in Office Action filed on April 10, 2006, the rejection under Glazer et al. (WO 00/61282, Oct. 19, 2000) in view of Sutton et al. (U.S. Patent

No. 5,714,340, Feb. 3, 1998), Yao et al. (U.S. PG Pub. No. US 2003/0100086 A1, filed May 30, 2001), and Obana (U.S. Patent No. 4,605,686, Aug. 12, 1986) obviate the claimed invention recited in amended claim 1, which includes limitations of canceled claims 8 and 43. Therefore, the rejection under Glazer et al. (WO 00/61282, Oct. 19, 2000) in view of Sutton et al. (U.S. Patent No. 5,714,340, Feb. 3, 1998), Yao et al. (U.S. PG Pub. No. US 2003/0100086 A1, filed May 30, 2001), and Obana (U.S. Patent No. 4,605,686, Aug. 12, 1986), and in light of Pierce et al. (U.S. Patent No. 4,258,001, Mar. 24, 1981) reads on the claimed invention recited in amended claim 1.

Conclusion

14. No claims allowed.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Unsu Jung whose telephone number is 571-272-8506. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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